

Title (en)

A method for producing an L-amino acid using bacterium of the Enterobacteriaceae family with attenuated expression of a gene coding for small RNA

Title (de)

Methode zur Produktion einer L-Aminosäure unter Verwendung eines Bakteriums der Enterobacteriaceae Familie mit einer abgeschwächten Expression eines Gens kodierend für sRNA

Title (fr)

Procede permettant de produire un acide amine à l'aide d'une bacterie appartenant a la famille des enterobacteries ayant une expression atténuee d'un gene codant un sRNA

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Abstract (en)

The present invention provides a method for producing an L-amino acid using a bacterium of the Enterobacteriaceae family, particularly a bacterium belonging to genus Escherichia or Pantoea, which has been modified to attenuate expression of a gene coding for sRNA.

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Citation (applicant)

- US 4278765 A 19810714 - DEBABOV VLADIMIR G, et al
- WO 9516042 A1 19950615 - AJINOMOTO KK [JP], et al
- US 4346170 A 19820824 - SANO KOUNOSUKE, et al
- US 5661012 A 19970826 - SANO KONOSUKE [JP], et al
- US 6040160 A 20000321 - KOJIMA HIROYUKI [JP], et al
- WO 9534672 A1 19951221 - AJINOMOTO KK [JP], et al
- US 6303383 B1 20011016 - NAKAMURA JUN [JP], et al
- JP H057491 A 19930119 - AJINOMOTO KK
- US 5175107 A 19921229 - DEBABOV VLADIMIR G [SU], et al
- US 5175107 A 19921229 - DEBABOV VLADIMIR G [SU], et al
- US 5705371 A 19980106 - KOZLOV JURY IVANOVICH [RU], et al
- US 5631157 A 19970520 - DEBABOV VLADIMIR G [RU], et al
- US 5939307 A 19990817 - WANG MING-DER [US], et al
- US 5474918 A 19951212 - KINO KUNIKI [JP], et al
- US 5376538 A 19941227 - KINO KUNIKI [JP], et al
- EP 1149911 A2 20011031 - AJINOMOTO KK [JP]
- EP 0593792 B1 19970514 - AJINOMOTO KK [JP]
- WO 2005049808 A1 20050602 - AJINOMOTO KK [JP], et al
- WO 03097839 A1 20031127 - CJ CORP [KR], et al
- EP 1013765 A1 20000628 - AJINOMOTO KK [JP]
- US 5827698 A 19981027 - KIKUCHI YOSHIMI [JP], et al
- EP 1253195 A1 20021030 - AJINOMOTO KK [JP]
- EP 1170376 A1 20020109 - AJINOMOTO KK [JP]
- US 5830716 A 19981103 - KOJIMA HIROYUKI [JP], et al
- WO 2005073390 A2 20050811 - AJINOMOTO KK [JP], et al
- WO 9523864 A1 19950908 - AJINOMOTO KK [JP], et al
- WO 2005010175 A1 20050203 - AJINOMOTO KK [JP], et al
- US 6218165 B1 20010417 - ESTELL DAVID A [US], et al
- RU 2312601 C1 20071220 - GU NII KARDIOLOGII TOM NAUCHNO [RU]
- US 5972663 A 19991026 - WINTERHALTER CHRISTOPH [DE], et al
- JP H11155571 A 19990615 - AJINOMOTO KK
- WO 0127307 A1 20010419 - CONSORTIUM ELEKTROCHEM IND [DE], et al
- US 6124121 A 20000926 - MARKOVICH GUSYATINER MIKHAIL [RU], et al
- JP S6234397 A 19870214 - MITSUBISHI ELECTRIC CORP
- JP H0870879 A 19960319 - KYOWA HAKKO KOGYO KK
- WO 9606926 A1 19960307 - AJINOMOTO KK [JP], et al
- US 6403342 B1 20020611 - GUSYATINER MIKHAIL MARKOVICH [RU], et al
- EP 1239041 A2 20020911 - AJINOMOTO KK [JP]

- RU 2003677 C1 19931130 - VSESOYUZNYJ NII GENETIKI I SEL [RU]
- RU 2119536 C1 19980927 - GENETIKI I SELEKTSII PROMY MIK, et al
- US 4388405 A 19830614 - SANO KOUNOSUKE [JP], et al
- US 6344347 B1 20020205 - KINO KUNIKI [JP], et al
- US 6258554 B1 20010710 - IKEDA MASATO [JP], et al
- JP S565099 A 19810120 - AJINOMOTO KK
- EP 1016710 A2 20000705 - AJINOMOTO KK [JP]
- EP 1172433 A1 20020116 - AJINOMOTO KK [JP]
- EP 1078959 A1 20010228 - DEGUSSA [DE]
- EP 0955368 A2 19991110 - AJINOMOTO KK [JP]
- EP 0952221 A2 19991027 - AJINOMOTO KK [JP]
- US 5378616 A 19950103 - TUJIMOTO NOBUHARU [JP], et al
- US 5573945 A 19961112 - ONO EIJI [JP], et al
- US 5908768 A 19990601 - ONO EIJI [JP], et al
- US 5393671 A 19950228 - TUJIMOTO NOBUHARU [JP], et al
- US 6110714 A 20000829 - MATSUI KAZUHIKO [JP], et al
- KR 890003681 B1 19890930 - MIWON CO LTD [KR]
- US 4407952 A 19831004 - TSUCHIDA TAKAYASU [JP], et al
- EP 0488424 B1 19970305 - AJINOMOTO KK [JP]
- US 2003148473 A1 20030807 - LIVSHITS VITALIY ARKADYEVICH [RU], et al
- US 2003157667 A1 20030821 - VITUSHKINA MARIA VIACHESLAVOVN [RU], et al
- US 5756345 A 19980526 - CAMAKARIS HELEN [AU], et al
- US 6180373 B1 20010130 - WICH GUENTER [DE], et al
- US 4371614 A 19830201 - ANDERSON DAVID M, et al
- WO 9708333 A1 19970306 - AJINOMOTO KK [JP], et al
- US 6319696 B1 20011120 - KISHINO HIROKO [JP], et al
- WO 9408031 A1 19940414 - CONSORTIUM ELEKTROCHEM IND [DE], et al
- JP S5771397 A 19820504 - AJINOMOTO KK
- JP S62244382 A 19871024 - AJINOMOTO KK
- WO 2005103275 A1 20051103 - AJINOMOTO KK [JP], et al
- DE 3127361 A1 19830203 - SCHERING AG [DE]
- GB 2075056 A 19811111 - AJINOMOTO KK
- RU 2124295 C1 19990110 - RAMOZ, et al
- US 2002058315 A1 20020516 - LUNTS MARIA GRIGORIEVNA [RU], et al
- RU 2112869 C1 19980610 - CHERNYSHOVA ELENA MIKHAJLOVNA
- EP 1170358 A1 20020109 - AJINOMOTO KK [JP]
- EP 1170361 A2 20020109 - AJINOMOTO KK [JP]
- US 5998178 A 19991207 - HASHIGUCHI KEN-ICHI [JP], et al
- US 5658766 A 19970819 - LIVSHITS VITALY ARKADIEVICH [RU], et al
- JP H05304969 A 19931119 - KYOWA HAKKO KOGYO KK
- JP H05130882 A 19930528 - KYOWA HAKKO KOGYO KK
- FR 356739 A 19051207 - CHARLES GLAUSER PERRIN [CH]
- WO 2005010175 A1 20050203 - AJINOMOTO KK [JP], et al
- US 6218168 B1 20010417 - LEINFELDER WOLFRED [DE], et al
- US 2005124049 A1 20050609 - ZIYATDINOV MIKHAIL K [RU], et al
- EP 0172433 A2 19860226 - TEKTRONIX INC [US]
- EP 0662143 A1 19950712 - CONSORTIUM ELEKTROCHEM IND [DE]
- WO 2006038695 A1 20060413 - AJINOMOTO KK [JP], et al
- WO 0153459 A1 20010726 - AJINOMOTO KK [JP], et al
- ARGAMAN L ET AL., CURRENT BIOLOGY, vol. 11, 2001, pages 941 - 950
- HERSHBERG, R. ET AL., NUCLEIC ACIDS RES., vol. 31, no. 7, 2003, pages 1813 - 1820
- VOGEL, J. ET AL., NUCLEIC ACIDS RES., vol. 31, no. 22, 2003, pages 6435 - 6443
- HERSHBERG, R. ET AL., NUCLEIC ACIDS RES., vol. 31, no. 7, 2003, pages 1813 - 1820
- WASSARMAN, K.M. ET AL., GENES DEV. 1, vol. 15, no. 13, 2001, pages 1637 - 1651
- HERSHBERG, R. ET AL., NUCLEIC ACIDS RES., vol. 31, no. 7, 2003, pages 1813 - 1820
- ARGAMAN, L. ET AL., CURRENT BIOLOGY, vol. 11, 2001, pages 941 - 950
- LEASE R.A. ET AL., PROC. NATL. ACAD. SCI. USA, vol. 95, no. 21, 1998, pages 12456 - 12461
- LEASE R.A. ET AL., J. BACTERIOL., vol. 186, no. 18, 2004, pages 6179 - 6185
- REPOILA F.; GOTTESMAN S., J. BACTERIOL., vol. 183, no. 13, 2001, pages 4012 - 4023
- REPOILA F.; GOTTESMAN S., J. BACTERIOL., vol. 185, no. 22, 2003, pages 6609 - 6614
- STORZ G. ET AL., CURR. OPIN. MICROBIOL., vol. 7, no. 2, 2004, pages 140 - 144
- MAJDALANI, N. ET AL., MOL. MICROBIOL., vol. 39, no. 5, 2001, pages 1382 - 1394
- M.L. URBANOWSKI ET AL., MOL. MICROBIOL., vol. 37, 2000, pages 856 - 868
- CHEN, S., J. BACTERIOL., vol. 186, no. 20, 2004, pages 6679 - 6680
- WASSARMAN, K.M., GENES DEV., vol. 15, no. 13, 2001, pages 1637 - 1651
- NEIDHARDT, F.C. ET AL.: "Escherichia coli and Salmonella typhimurium", AMERICAN SOCIETY FOR MICROBIOLOGY, pages: 1208
- INT. J. SYST. BACTERIOL., vol. 43, 1993, pages 162 - 173
- QIU, Z.; GOODMAN, M.F., J. BIOL. CHEM., vol. 272, 1997, pages 8611 - 8617
- KWON, D. H. ET AL., J. ANTIMICROB. CHEMOTHER., vol. 46, 2000, pages 793 - 796
- CARRIER T.A.; KEASLING, J.D., BIOTECHNOL PROG., vol. 15, 1999, pages 58 - 64
- DATSENKO, K.A.; WANNER, B.L., PROC. NATL. ACAD. SCI. USA, vol. 97, no. 12, 2000, pages 6640 - 6645
- SAMBROOK, J.; FRITSCH, E.F.; MANIATIS, T.: "Molecular Cloning: A Laboratory Manual", 1989, COLD SPRING HARBOR LABORATORY PRESS
- GUSYATINER ET AL., GSNETIKA, vol. 14, 1978, pages 947 - 956
- WHITE, T.J. ET AL., TRENDS GENET., vol. 5, 1989, pages 185
- BLOOM F.R. ET AL., THE 15TH MIAMI WINTER SYMPOSIUM, 1983, pages 34
- DATSENKO, K.A.; WANNER, B.L., PROC. NATL. ACAD. SCI. USA, vol. 97, no. 12, 2000, pages 6640 - 6645
- SAMBROOK ET AL.: "Molecular Cloning: A Laboratory Manual", 1989, COLD SPRING HARBOR LABORATORY PRESS
- MILLER, I.H.: "Experiments in Molecular Genetics", 1972, COLD SPRING HARBOR LAB. PRESS
- MILLER, J.H.: "Experiments in Molecular Genetics", 1972, COLD SPRING HARBOR LAB. PRESS
- SCIENCE, vol. 277, 1997, pages 1453 - 1474
- DATSENKO; WANNER, PROC. NATL. ACAD. SCI. USA, vol. 97, no. 12, 2000, pages 6640 - 6645
- SAMBROOK, J. ET AL.: "Molecular Cloning Laboratory Manual", 1989, COLD SPRING HARBOR LABORATORY PRESS

Citation (search report)

- [Y] WO 03046184 A1 20030605 - DEGUSSA [DE], et al
- [Y] US 6228638 B1 20010508 - ROMEO TONY [US]
- [YP] WO 2006123763 A1 20061123 - AJINOMOTO KK [JP], et al
- [Y] FAUBLADIER M ET AL: "ESCHERICHIA COLI CELL DIVISION INHIBITOR DICF-RNA OF THE DICB OPERON", JOURNAL OF MOLECULAR BIOLOGY, LONDON, GB, vol. 212, no. 3, 1990, pages 461 - 471, XP008066900, ISSN: 0022-2836
- [Y] MAJDALANI NADIM ET AL: "Bacterial small RNA regulators.", CRITICAL REVIEWS IN BIOCHEMISTRY AND MOLECULAR BIOLOGY 2005 MAR-APR, vol. 40, no. 2, March 2005 (2005-03-01), pages 93 - 113, XP002460439, ISSN: 1040-9238
- [AD] HERSHBERG RUTH ET AL: "A survey of small RNA-encoding genes in Escherichia coli.", NUCLEIC ACIDS RESEARCH 1 APR 2003, vol. 31, no. 7, 1 April 2003 (2003-04-01), pages 1813 - 1820, XP002460256, ISSN: 1362-4962
- [Y] DELIHAS N ET AL: "MicF: an antisense RNA gene involved in response of Escherichia coli to global stress factors", JOURNAL OF MOLECULAR BIOLOGY, LONDON, GB, vol. 313, no. 1, 12 October 2001 (2001-10-12), pages 1 - 12, XP004466184, ISSN: 0022-2836, DOI: 10.1006/JMBI.2001.5029
- [Y] BEGIC SANELA ET AL: "Regulation of Serratia marcescens ompF and ompC porin genes in response to osmotic stress, salicylate, temperature and pH", MICROBIOLOGY (READING), vol. 152, no. Part 2, February 2006 (2006-02-01), pages 485 - 491, XP002639866, ISSN: 1350-0872
- [A] ANDERSEN J ET AL: "The isolation and characterization of RNA coded by the micF gene in Escherichia coli.", NUCLEIC ACIDS RESEARCH 11 MAR 1987 LNKD- PUBMED:2436145, vol. 15, no. 5, 11 March 1987 (1987-03-11), pages 2089 - 2101, XP001525866, ISSN: 0305-1048
- [A] STORZ GISELA ET AL: "An abundance of RNA regulators.", ANNUAL REVIEW OF BIOCHEMISTRY 2005, vol. 74, 2005, pages 199 - 217, XP002460440, ISSN: 0066-4154
- [T] URBAN JOHANNES H ET AL: "Translational control and target recognition by Escherichia coli small RNAs in vivo.", NUCLEIC ACIDS RESEARCH 2007, vol. 35, no. 3, 2007, pages 1018 - 1037, XP002460257, ISSN: 1362-4962

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